Claims

Claims 1–11 (canceled)

12. (withdrawn) A molecular array for characterizing molecular interaction events, comprising:

(a) a substrate; and

(b) at least one discrete molecular deposition domain on said substrate wherein the spatial address of the domain is less than one micron squared in area and each domain includes a biomolecule deposited on the substrate at a pre-selected location.

13. (withdrawn) The molecular array of claim 12 wherein the at least one molecular deposition domain is a line.

14. (withdrawn) The molecular array of claim 12 wherein the at least one molecular deposition domain is a spot.

15. (withdrawn) The molecular array of claim 12 wherein the at least one molecular deposition domain is an irregular shape.

16. (withdrawn) The molecular array of claim 12 wherein the at least one molecular deposition domain is a regular shape.

17. (withdrawn) The molecular array of claim 12 wherein the at least one deposition domain is deposited at a known location.

18. (withdrawn) The molecular array of claim 12 wherein the molecular deposition domains are affixed to the surface in a high density format.

19. (withdrawn) The molecular array of claim 12 wherein the substrate is modified by one or more of the group consisting of gold, an amino group, a carboxyl group, and polymers.

20. (withdrawn) The molecular array of claim 12 wherein the substrate is chosen from the group consisting of hydrophobic materials and hydrophilic materials.

21. (withdrawn) The molecular array of claim 12 wherein the biomolecule is a protein.

22. (withdrawn) The molecular array of claim 12 wherein the biomolecule is an antibody.

23. (withdrawn) The molecular array of claim 12 wherein the biomolecule is a nucleic acid.

24. (withdrawn) The molecular array of claim 12 wherein the biomolecule is a DNA molecule.

25. (withdrawn) The molecular array of claim 12 wherein the biomolecule is an RNA molecule.

26. (withdrawn) A molecular array for characterizing molecular interaction events, comprising:

(a) a substrate; and

(b) at least one discrete molecular deposition domain on said substrate wherein the spatial address of the domain is less than one micron squared in area and each domain includes a silane deposited on the substrate at a pre-selected location.

27. (withdrawn) An array for the identification of a target material comprising:

a substrate including a substantially flat surface; and

an at least one discrete deposition domain deposited on said surface, said deposition domain being smaller than one micron squared in total area and deposited at a pre-selected

location on the surface, the deposition domain including a long chain biomolecular deposition material having the capacity to bind the target material.

28. (withdrawn) The array of claim 27 wherein the deposition material is a protein.

29. (withdrawn) The array of claim 27 wherein the deposition material is an antibody.

30. (withdrawn) The array of claim 27, wherein the deposition material is a nucleic acid.

31. (withdrawn) The array of claim 27 wherein the deposition material is a DNA molecule.

32. (withdrawn) The array of claim 27 wherein the surface is chosen from one or more of the group consisting of a hydrophobic surface and a hydrophilic surface.

33. (withdrawn) The array of claim 27 wherein the substantially flat surface further comprise a sputter deposited layer of gold thereon, the deposition domain deposited on the gold.

34. (withdrawn) An array of deposition domains for the detection of one or more pre-determined target materials comprising:

a solid glass substrate including a substantially flat surface; and

an at least one discrete domain deposited on the surface of the substrate, each domain being deposited at a known location and being smaller than one micron squared in area, each domain further including at least one type of molecule with a binding affinity for one or more of the target materials, at least two domains containing different biologically or chemically based molecules.

35. (withdrawn) The array of claim 34 wherein the molecule is chosen from one or more of the group consisting of a protein, antibody, nucleic acid, and DNA.

36. (withdrawn) The array of claim 34 wherein the surface is modified.

37. (withdrawn) A molecular array for characterizing molecular interaction events, comprising:

(a) a substrate; and

(b) at least one molecular deposition domain on said substrate wherein the spatial address of the domain is less than one micron squared in area, each domain includes a biologically or chemically based molecule directly deposited on the substrate at a pre-selected location, at least two domains containing different biologically or chemically based molecules.

38. (withdrawn) The array of claim 37 wherein the substrate is chosen from one or more of the group consisting of mica, glass, silicon, and quartz.

39. (withdrawn) The molecular array of claim 12, wherein the array comprises more than one molecular deposition domain, and wherein the biomolecule is selected from the group consisting of a protein, an antibody, a nucleic acid, a succinimide, a DNA molecule, an RNA molecule, and combinations thereof.

40. (withdrawn) A molecular array for characterizing molecular interaction events, comprising:

(a) a substrate; and

(b) at least one discrete molecular deposition domain on said substrate wherein the spatial address of the domain is from about 100 square nanometers to about 40,000 square microns in area and each domain includes a biomolecule deposited on the substrate at a pre-selected location.

41. (withdrawn) An array, comprising:

(a) a substrate; and

(b) at least one patch immobilized on the substrate, the patch having an area of from about 100 square nanometers to about 40,000 square microns and each patch includes an immobilized protein-capture agent.

42. (withdrawn) The array according to claim 41, wherein the immobilized protein-capture agent is a biomolecule.

43. (withdrawn) The array according to claim 41, wherein the immobilized protein-capture agent is an antibody.

44. (withdrawn) The array according to claim 41, wherein the at least one patch has an area of about 1 micron squared.

45. (new) A method for making an array device comprising the steps of:

a) providing a substrate having a surface; and one or more protein immobilization regions on said surface, said protein immobilization regions each comprising;

i. an ordered hydrophobic monolayer formed of alkyl chains having proximal ends which are chemisorbed or physisorbed to said surface within said immobilization regions, and opposite hydrophobic distal ends;

ii. a hydrophilic monolayer attached to said ordered hydrophobic monolayer, said hydrophilic monolayer comprising a set of first hydrophilic chains, each first hydrophilic chain having a proximal end by which said first hydrophilic chain is linked to an alkyl chain distal end, and an opposite hydrophilic distal end;

iii. one ore more functional groups, each for covalently attaching a protein capture agent thereto and each covalently attached to one or more of said hydrophilic distal ends of said first hydrophilic chains;

b) reacting one or more of said protein capture agents to one or more of said functional groups attached to a first subset of said set of first hydrophilic chains within said immobilization regions to attach said one or more protein capture agents through a residue

formed by said reaction of said protein capture agents with said functional groups of said first subset of said first hydrophilic chains; and,

c) reacting one or more second hydrophilic chains with a second subset of said set of first hydrophilic chains so that one or more of said second hydrophilic chains attach through one or more residues of one or more of said second subset of said first hydrophilic chains.

46. (new) The method of claim 45 wherein at least one of said second hydrophilic chains is polyethylene glycol.

47. (new) The method of claim 45 wherein at least one of said first hydrophilic chains is oligoethylene glycol.